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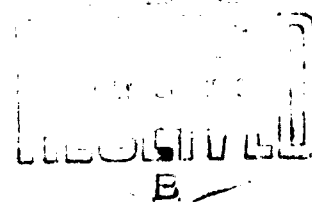
AFHRL-TR-70-11

**OCCUPATIONAL SURVEY OF THE DATA SYSTEMS
CAREER FIELD (68XX0)**

By
William J. Phalen

**PERSONNEL RESEARCH DIVISION
Lackland Air Force Base, Texas**

May 1970



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AIR FORCE SYSTEMS COMMAND

BROOKS AIR FORCE BASE, TEXAS

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**PERSONNEL RESEARCH DIVISION
AIR FORCE HUMAN RESOURCES LABORATORY
AIR FORCE SYSTEMS COMMAND
Lackland Air Force Base, Texas**

FOREWORD

This report demonstrates how the electronic computer can be used to make comprehensive and detailed occupational information available to using agencies. The survey reported was one of several conducted by Lifson, Wilson, Ferguson, and Winick, Inc., Dallas, Texas, under Contract No. AF 41(609)-3049.

The computer programs for analyzing the job inventory data were designed by Dr. Raymond E. Christal and were written by Computer Sciences Corporation, Houston, Texas, under Contracts No. AF 41(609)-1982 and AF 41(609)-2387. Mr. S. B. Boyce prepared the control cards for the programs.

The research was carried out under Project 7734, Development of Methods for Describing, Evaluating, and Structuring Air Force Jobs - Task 773401, Development of Methods for Collecting, Analyzing, and Reporting Information Describing Air Force Specialties.

In writing this report, considerable material was adapted from PRL-TR-66-11, Occupational Survey of Veterinary Career Ladders, by Joseph E. Morsh, Wayne B. Archer, and Harry M. Kudrick.

Sgt T. H. Fortman performed most of the initial analyses, as well as the initial programming support for this study. He prepared computerized tables of data items essential to all later analyses. He selected the various subsample groups reported, including the subsample used in the hierarchical grouping. He also prepared job descriptions of hierarchical groups and made the initial selection of job types.

Additional selections of job types and important analytical observations were made by Dr. Marion E. Hook.

Sgt P. B. Aitken-Cade assisted in making further analyses of the Data Services (681X0) career ladder.

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This technical report has been reviewed and is approved.

John G. Dailey, Colonel, USAF
Commander

ABSTRACT

A job inventory covering 15 specialties in the Data Systems career field, and consisting of 511 tasks grouped under 14 duty categories, was administered to 4865 airmen in 19 major air commands, from which 4762 usable cases were obtained. A subsample of 1622 cases was selected for processing by the automated job clustering program, and an additional 229 cases from the Data Services (681X0) career ladder were added to this subsample and the automated job clustering reperfomed. Incumbents of all skill levels completed a background information section and rated on a 7-point scale relative time spent on tasks. The airmen also indicated on a 7-point scale how they received their training in the tasks performed. Job descriptions are presented for 20 "special" groups selected according to background information variables. Included are the DAFSC and total sample groups for each career ladder. Duty and task descriptions are presented for the total Data Systems (68XX0) subsample of 1622 cases, for 7 major job-type clusters, for 9 job-type subclusters, and for 58 significant job types identified by the automated job clustering program.

A group overlap matrix shows the similarity of groups in terms of time spent on tasks. Group summary tables indicate the percentage of members in each group who perform each task. Group difference descriptions are given for various pairs of DAFSC groups. Distributions of background variables for the total subsample of 1622 cases, the 7 major job-type clusters, and the 9 job-type subclusters are also shown. Also included are distributions of background variables for the 15 specialty groups and the total group surveyed (N = 4762). Responses to items in the background information section are presented for every case in the survey. The complete inventory of duties and tasks used in the survey is also included.

OCCUPATIONAL SURVEY OF THE DATA SYSTEMS CAREER FIELD AFSC 68XX0

SUMMARY OF CONTENTS

An occupation survey of the Data Systems Career Field was conducted during November 1967, by Lifson, Wilson, Ferguson, and Winick, Inc., under a contract monitored by the Personnel Research Division. The survey instrument was a job inventory consisting of a background information section and 511 task statements grouped under 14 duty categories.

In completing the inventory, each incumbent supplied identification and biographical data and checked the tasks which were part of his regular job. He then rated the tasks he had checked on two 7-point scales. The first scale showed relative time spent on each task compared with other tasks performed. The second rating scale indicated how the incumbent had learned to do the task, whether from school training or from work experience.

The inventory was administered to 4,865 incumbents by Test Control Officers in 19 major air commands.

Consolidated job descriptions were computed for subsample groups of special interest, and group difference descriptions were computed for various pairs of subsamples.

In order to identify areas of specialization, an automated job clustering program was utilized to analyze the task data provided by the survey, and task and duty job descriptions were published for the total sample and various subsamples.

Summary tables were prepared to show the percentage of members in subsample groups who perform each task. Other tables show the percentage of members of the total sample, job-type clusters, job-type subclusters, and job types who perform each task. A group overlap matrix shows the amount of similarity of subsample groups, job-type groups, and the total sample in terms of percent time spent on tasks.

From the background information, additional significant data were collected concerning the performance of specific duties and tasks. Means, standard deviations, and distributions of specified background variables were computed for various subsample groups, job-type groups, and the total sample.

In other tables, the background information provided by all surveyed incumbents has been listed in which each individual is identified by a unique number assigned by the computer. Since these numbers are listed in sequence, data concerning the members of any job type may readily be obtained.

A dictionary of variables and the duties and tasks of the job inventory used in the survey have been provided.

A copy of the complete occupational analysis survey report is available to qualified requesters from the Personnel Research Division on a loan basis. The computer printouts included in the report contain the following data:

Specialty Group Job Descriptions

DAFSC 68130 Apprentice Data Services Specialist
DAFSC 68150 Data Services Specialist
DAFSC 68170 Data Services Supervisor
DAFSC 68330 Management Analysis Specialist
DAFSC 68370 Management Analysis Technician
DAFSC 68390 Data Services and Analysis Superintendent
DAFSC 68530 Apprentice Data Processing Machine Operator
DAFSC 68550 Data Processing Machine Operator
DAFSC 68570 Data Processing Machine Supervisor
DAFSC 68630 Data Systems Analysis and Design Specialist
DAFSC 68670 Data Systems Analysis and Design Technician

DAFSC 68730 Apprentice Programming Specialist
DAFSC 68750 Programming Specialist
DAFSC 68770 Programming Technician
DAFSC 68790 Data Systems Superintendent
DAFSC 681X0 Data Services Career Ladder
DAFSC 683X0 Management Analysis Career Ladder
DAFSC 685X0 Data Processing Machine Operator Career Ladder
DAFSC 686X0 Data Systems Analysis and Design Career Ladder
DAFSC 687X0 Programming Career Ladder
DAFSC 68XX0 Data Systems Career Field Total Sample (N = 4762)

Job-Type Descriptions

Data Systems Career Field Total Subsample (N=1622)
Programming Major Job-Type Cluster
Automatic Data Processing Major Job-Type Cluster
Data Services Major Job-Type Cluster
Data Services Supervision (Higher Level) Major Job-Type Cluster
Automatic Data Processing Supervision (Higher Level) Major Job-Type Cluster
Punch Card Accounting Machine Operation Major Job-Type Cluster
Management Analysis Major Job-Type Cluster

Programming Subclusters and Job Types

Data Systems and Computer Programming Subcluster

Programmer and Data Automation Specialist
Data Systems Specialist
Automatic Data Processing and Programming Specialist
Data Services and Programming Specialist

Computer Programming (Highly Skilled) Subcluster

Programming Technician
Programmer and Systems Analyst
Programming Supervisor
Programmer and Systems Design Specialist
Programmer (Burroughs 263)
Programmer (IBM 1401 or 1410 with Tapes)
Data Systems Technician

Computer Programming (Skilled and Semiskilled) Subcluster

Programmer (Specialized - Routine)
Programmer (Semiskilled - Routine)
Programmer (Specialized - Skilled)
Programmer and Automatic Data Processing Specialist
Programmer (Unspecialized)
Scientific Programmer

Air Force Military Personnel System Programmer (Unsubclustered Job Type)

Computer Programming Supervision (Higher Level) Subcluster

Data Automation Superintendent
Programming Superintendent

Data Systems Analysis and Design Technician (Unclustered Job Type)

Automatic Data Processing Subclusters and Job Types

Automatic Data Processing Equipment Operation Subcluster

Automatic Data Processing Machine Operator (Specialized)
Automatic Data Processing Machine Operator (Unspecialized)
Punch Card Accounting Machine Operations Shift Supervisor
Punch Card Accounting Machine Operator
Automatic Data Processing Machine Operations Shift Supervisor
Electronic Computer Operator

Automatic Data Processing Supervision (Lower Level) Subcluster

Automatic Data Processing Machine Operations Supervisor
Computer Operations Shift Supervisor
NCOIC Automatic Data Processing Machine Operations
Production Control and Data Management Specialist

Data Services Subclusters and Job Types

Data Services Operations Subcluster

Apprentice Data Services Specialist and Punch Card Accounting Machine Operator
Data Services Specialist
Apprentice Data Services Specialist
Reports Technician
Data Services Specialist and Punch Card Accounting Machine Operator

Data Services Supervision (Lower Level) Subcluster

NCOIC Data Management
Data Systems Scheduler and Coordinator
NCOIC Reports Section
Data Systems Coordinator and Punch Card Accounting Machine Operator
NCOIC Production Control and OJT
NCOIC Production Control

Data Management Subcluster

Data Management Technician
Files Management Specialist

Data Services Supervision (Higher Level) Job Types

Data Automation Supervisor
NCOIC Data Systems Analysis and Control

Automatic Data Processing Supervision (Higher Level) Job Types

NCOIC Data Services and Data Processing Machine Operations
Data Systems Superintendent
NCOIC Data Processing Machine Operations

Punch Card Accounting Machine Operation Job Types

Automatic Data Processing Machine Operator (Highly Specialized)
Apprentice Punch Card Accounting Machine Operator and Data Services Specialist
Key Punch Operator

Management Analysis Job Types

NCOIC Management Analysis Branch
Management Analysis Specialist (Commander's Staff)
Management Analysis Technician
Management Analysis Specialist (Routine)
Statistical Services Supervisor
NCOIC Management Services Branch

Group Difference Descriptions

Data Services Specialist DAFSC 68150 vs. Apprentice Data Services Specialist DAFSC 68130
Data Services Supervisor DAFSC 68170 vs. Data Services Specialist DAFSC 68150
Data Services and Analysis Superintendent DAFSC 68390 vs. Data Services Supervisor DAFSC 68170
Management Analysis Technician DAFSC 68370 vs. Management Analysis Specialist DAFSC 68330
Data Services and Analysis Superintendent DAFSC 68390 vs. Management Analysis Technician DAFSC 68370
Data Processing Machine Operator DAFSC 68550 vs. Apprentice Data Processing Machine Operator DAFSC 68530
Data Processing Machine Supervisor DAFSC 68570 vs. Data Processing Machine Operator DAFSC 68550
Data Systems Superintendent DAFSC 68790 vs. Data Processing Machine Supervisor DAFSC 68570
Data Systems Analysis and Design Technician DAFSC 68670 vs. Data Systems Analysis and Design Specialist DAFSC 68630
Data Systems Superintendent DAFSC 68790 vs. Data Systems Analysis and Design Technician DAFSC 68670
Programming Specialist DAFSC 68750 vs. Apprentice Programming Specialist DAFSC 68730
Programming Technician DAFSC 68770 vs. Programming Specialist DAFSC 68750
Data Systems Superintendent DAFSC 68790 vs. Programming Technician DAFSC 68770
Management Analysis Specialist DAFSC 68330 vs. Data Services Specialist DAFSC 68150
Data Processing Machine Operator DAFSC 68550 vs. Data Services Specialist DAFSC 68150
Data Systems Analysis and Design Specialist DAFSC 68630 vs. Data Services Specialist DAFSC 68150
Programming Specialist DAFSC 68750 vs. Data Services Specialist DAFSC 68150
Data Systems Analysis and Design Specialist DAFSC 68630 vs. Data Processing Machine Operator DAFSC 68550
Programming Specialist DAFSC 68750 vs. Data Processing Machine Operator DAFSC 68550
Programming Specialist DAFSC 68750 vs. Data Systems Analysis and Design Specialist DAFSC 68630

Group Summaries - Percentage of Members Performing Each Task

Data Systems Career Field DAFSC Groups and Total Sample
Data Processing Machine Operator AFMS Groups
Programming AFMS Groups
Total Subsample (GRP001) and Major Job-Type Clusters
Job-Type Subclusters
Job Types

Dictionary of Variables

Summary of Background Variables - Frequency Counts, Means, and Standard Deviations

Data Systems Career Field DAFSC Groups and Total Sample
Total Subsample (GRP001), Major Job-Type Clusters, and Subclusters

Group Overlap Matrices

Data Systems Career Field DAFSC Groups and Total Sample
Total Subsample (GRP001), Major Job-Type Clusters, Subclusters, and Job Types

Analysis of "How Learned" by Task for Data Systems Career Field DAFSC Groups and Total Sample

KPATH Printouts

KPTH01 Background Information

KPATH1 Organization and Base or Installation

KPATH2 Present Work Assignment (Job Title)

Job Inventory for Data Systems (68XX0) Career Field

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airman career ladders						
airman specialties						
Automatic Data Processing Machine Operator						
checklist						
Computer Operator						
computer techniques						
Data Automation Specialist						
data collection						
Data Management Specialist						
Data Processing Machine Operator						
career ladder						
Data Services Career Ladder						
Data Systems Analysis and Design Career Ladder						
Data Systems Career Field						
duty AFSC						
Electronic Computer Operator						
hierarchical grouping						
job analysis						
job description						
job grouping						
job inventory						
job type						
Key Punch Operator						
Management Analysis Career Ladder						
military jobs						
occupational survey						
Programming Career Ladder						
Punch Card Accounting Machine Operator						
rating scales						
Statistical Services Specialist						
Systems Analysis and Design Specialist						
task ratings						
task statements						

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